

I claim:

1. A chamber seal device for sealing a wafer stage chamber assembly of a photolithography system for manufacturing semiconductor substrates, the wafer stage chamber assembly having a first portion and a second portion, the chamber seal device comprising:

a plurality of pins aligned on a first flange surrounding a perimeter of the first portion for insertion into a corresponding plurality of openings on a second flange surrounding a perimeter of the second portion, each of the plurality of pins having a pinhead;

at least one keyhole strip for insertion into at least a portion of the plurality of pinheads to slidably lock the plurality of pins fastening at least a portion of the first and second flanges to construct the wafer stage chamber assembly; and

an o-ring seal positioned in between and surrounding the perimeter of the first and second flanges to seal the wafer stage chamber assembly.

2. The chamber seal device of claim 1, wherein the o-ring seal is inflatable to press the first portion against the second portion creating a sealing engagement of the wafer stage chamber assembly.

3. A photolithography system comprising the chamber seal device of claim 1.

4. A chamber seal device for sealing a wafer stage chamber assembly of a photolithography system for manufacturing semiconductor substrates, the wafer stage chamber assembly having a first portion and a second portion, the chamber seal device comprising:

5 at least one clamp channel to fasten at least a portion of a perimeter of a first flange of the first portion with a corresponding portion of a second flange of the second portion; and

at least one o-ring seal positioned in between and surrounding the perimeter of the first and second flanges to seal the wafer stage chamber assembly.

10 5. The chamber seal device of claim 4, wherein the at least one o-ring seal is inflatable to create a sealing engagement of the wafer stage chamber assembly.

6. A photolithography system comprising the chamber seal device of claim 4.

7. A wafer stage chamber assembly of a photolithography system for manufacturing semiconductor substrates, comprising:

a chamber portion having a first flange surrounding a perimeter of the chamber portion;

5 a top wall having a second flange surrounding a perimeter of the top wall, the second flange having a plurality of openings;

a plurality of pins aligned on the first flange for insertion into the plurality of openings on the second flange, each of the plurality of pins having a pinhead;

10 at least one keyhole strip for insertion into at least a portion of the plurality of pinheads to slidably lock the plurality of pins fastening at least a portion of the first and second flanges to construct the wafer stage chamber assembly; and

an o-ring seal positioned in between and surrounding the perimeter of the first and second flanges to seal the wafer stage chamber assembly.

15 8. The wafer stage chamber assembly of claim 7, wherein the o-ring seal is inflatable to press the chamber portion against and the top wall creating a sealing engagement of the wafer stage chamber assembly.

9. A photolithography system comprising the wafer stage chamber assembly of claim 7.

10. A wafer stage chamber assembly of a photolithography system for manufacturing semiconductor substrates, comprising:

a chamber portion having a first flange surrounding a perimeter of the chamber portion;

5 a top wall having a second flange surrounding a perimeter of the top wall;

at least one clamp channel to fasten at least a portion of the perimeter of the first flange with a corresponding portion of the second flange; and

at least one o-ring seal positioned in between and surrounding the perimeter of the first and second flanges to seal the wafer stage chamber assembly.

10 11. The wafer stage chamber assembly of claim 10, wherein the at least one o-ring seal is inflatable to press the chamber portion against and the top wall creating a sealing engagement of the wafer stage chamber assembly.

12. A photolithography system comprising the wafer stage chamber assembly of claim 10.

13. A wafer stage chamber assembly of a photolithography system for manufacturing semiconductor substrates, comprising:

a chamber portion having a U-shaped clamp surrounding a perimeter of the chamber portion;

5 a top wall having a flange surrounding a perimeter of the top wall, the flange fitted for engagement with the U-shaped clamp;

at least one o-ring seal positioned between one leg of the U-shaped clamp and the flange surrounding the perimeter of the chamber portion and the top wall to seal the wafer stage chamber assembly.

10 14. A photolithography system comprising the wafer stage chamber assembly of claim 13.

15. A chamber seal device that seals a chamber assembly, the chamber assembly having a first portion and a second portion, the chamber seal device comprising:

5 a connecting member that connects the first portion and the second portion; and
a sealing member that contacts to at least one of the first portion and the second portion, the sealing member including a pressing portion that creates a sealing engagement of the chamber after connecting the first portion and the second portion by the connecting member.

16. A stage assembly comprising the chamber assembly of claim 15.

10 17. An exposure apparatus comprising the stage assembly of claim 16.

18. An object on which said image has been formed by the exposure apparatus of claim 17.

19. A method for making a chamber assembly, the chamber assembly having a first portion and a second portion, the method comprising:

15 connecting the first portion and the second portion; and

disposing a sealing member that contacts to at least one of the first portion and the second portion so that a pressing portion of the sealing member creates a sealing engagement of the chamber after connecting the first portion and the second portion.

20. A method for making a stage assembly, comprising:
providing a stage device; and
providing the chamber assembly made by utilizing the method of claim 19 so that
5 the chamber assembly encloses the stage device.

21. A method for making an exposure apparatus comprising the stage
assembly made by utilizing the method of claim 20.

22. A method for making an object including at least the photolithography
process, wherein the photolithography process uses the exposure apparatus made by
10 utilizing the method of claim 21.

23. A method for creating a space surrounded by at least a first portion and a
second portion, the method comprising:
connecting the first portion and the second portion; and
15 disposing a sealing member that contacts to at least one of the first portion and
the second portion so that a pressing portion of the sealing member creates a sealing
engagement after connecting the first portion and the second portion.